



## EUROPEAN PATENT APPLICATION

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## (54) Lithographic device

(57) A lithographic projection apparatus (1) comprising:

- a radiation system (LA) for supplying a projection beam (PB) of radiation;
- a mask table (MT) provided with a mask holder for holding a mask (MA);
- a substrate table (WT) provided with a substrate holder for holding a substrate (W);
- a projection system (PL) for imaging an irradiated portion of the mask onto a target portion of the substrate,

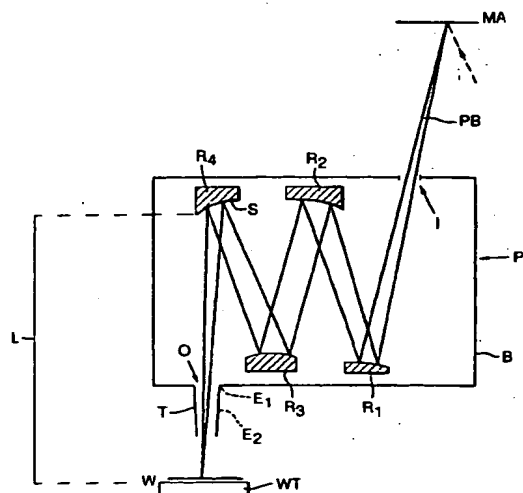
whereby:

- a) the projection system is separated from the substrate table by an intervening space (L) which can be at least partially evacuated and which is delimited at the location of the projection system by a solid surface from which the employed radiation is directed toward the substrate table;
- b) the intervening space contains a hollow tube (T) located between the solid surface and the substrate table and situated around the path of the radiation, the form and size of the tube being such that radiation focused by the projection system onto the substrate table does not intercept a wall of the hollow

tube;

c) means are provided for continually flushing the inside of the hollow tube with a flow of gas.

Fig.2.





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# EUROPEAN SEARCH REPORT

Application Number  
EP 99 30 3722

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	EP 0 532 968 A (HITACHI LTD) 24 March 1993 (1993-03-24) * column 1, line 3 - line 7 * * column 2, line 48 - column 5, line 44 * * figures 1,2 * -----	1,2,6,7	G03F7/20
			TECHNICAL FIELDS SEARCHED (Int.Cl.6) G03F
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		1 February 2000	Heryet, C
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.

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01-02-2000

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0532968 A	24-03-1993	JP 5082417 A	02-04-1993
		US 5305364 A	19-04-1994

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